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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application No.:	08/950,826
Filing Date:	October 15, 1997
Applicant:	Yukio Uemura et al.
Group Art Unit:	3743
Examiner:	J. Ford
Title:	Air Conditioning Apparatus
Attorney Docket:	4041J0063CPA

Appeal No. _____

APPEAL BRIEF

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231
on MARCH 4, 2002.

By _____.

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

This is an appeal from the August 10, 2001 Final Rejection of Claims 1, 3-8, 10 and 19-24 in the above-referenced patent application. None of the claims have been allowed. Claims 9 and 11-18 were cancelled in a Response mailed October 25, 2000. Claim 2 is currently withdrawn from consideration.

Claims 1, 3-8, 10 and 19-24 are rejected under 35 USC §103(a) as being unpatentable over JA 7-47831 or Iritani (USP 5,526,650) or Nonoyama (USP 5,309,731) in view of JA 6-270645. Claims 1, 3-8, 10 and 19-24 are rejected under 35 USC §103(a) as being unpatentable over the prior art as applied to Claims 1, 3-8, 10 and 19-24 above and further in view of Fujii (USP 5,191,768). The claims on appeal are Claims 1, 3-8,10 and 19-24 and these claims are reproduced in Appendix A.

REAL PARTY IN INTEREST

DENSO Corporation is the real party in interest, being the assignee of the present application. The Assignment is recorded on Reel 8856 at Frame 0230.

RELATED APPEALS AND INTERFERENCES

To the best of Applicant's knowledge, no other appeals or interferences are pending, which will directly affect, be directly affected by or have a bearing on the Board's decision in the present pending application.

STATUS OF THE CLAIMS

Claims 1-8, 10 and 19-24 are pending in this application. Claims 1, 3-8, 10 and 19-24 stand finally rejected. Claim 2 is withdrawn from consideration at this time. Claims 9 and 11-18 were cancelled.

STATUS OF THE AMENDMENTS

Applicant has not filed an Amendment in response to the Final Rejection by the Examiner mailed August 10, 2001.

SUMMARY OF THE INVENTION

Referring primarily to Figures 1 and 3, Claim 1 defines an air conditioning apparatus (1) for a vehicle which includes a passenger compartment. The air conditioning case (2) has an inside air suction port (26) and an outside air suction port (29) located at one end of the case. The other end of the air conditioning case (2) has at least a first air opening (15) for blowing air toward a lower portion of the passenger compartment and a second air opening (16) for blowing air toward a windshield. A partition member (12) divides the air conditioning case into a first air passage (13) and a second air passage (14). The first air passage (13) extends from the inside air suction port (26) to the first air opening (15) which blows air toward a lower portion of the passenger compartment. The second air passage (14) extends from the outside air suction port (29) to the second air opening (16) which blows air toward the windshield. A blower (6) blows air through the first and second passages from one side of the case to the other.

A cooling heat exchanger (7) is located within the first and second air passages (13, 14) to cool air passing therethrough. A heating heat exchanger (8) is also located within the first and second air passages (13, 14) downstream from the cooling heat exchanger (7) to heat air passing therethrough. A temperature sensor (39) is located at a side of one of the first and second air passages to detect a cooling

temperature of the cooling heat exchanger (7). Adjusting means adjusts the refrigerant flow into the cooling heat exchanger (7). Adjusting control means compares the cooling temperature detected by the temperature sensor (39) to a set temperature for controlling the operation of the adjusting means which controls the refrigerant flow into the cooling heat exchanger (7). Finally, the air conditioning apparatus comprises changing means for changing the set temperature (the temperature which is compared with the reading received from the temperature sensor (39)) according to the temperature of outside air. Thus, the refrigerant flow to the cooling heat exchanger is controlled based upon the outside air temperature.

Referring primarily to Figures 1 and 3, Claim 10 defines an air conditioning apparatus (1) for a vehicle which includes a passenger compartment. The air conditioning case (2) has an inside air suction port (26) and an outside air suction port (29) located at one end of the case. The other end of the air conditioning case (2) has at least a first air opening (15) for blowing air toward a lower portion of the passenger compartment and a second air opening (16) for blowing air toward a windshield. A partition member (12) divides the air conditioning case into a first air passage (13) and a second air passage (14). The first air passage (13) extends from the inside air suction port (26) to the first air opening (15) which blows air toward a lower portion of the passenger compartment. The second air passage (14) extends from the outside air suction port (29) to the second air opening (16) which blows air toward the windshield. A blower (6) blows air through the first and second passages from one side of the case to the other.

A cooling heat exchanger (7) is located within the first and second air passages (13, 14) to cool air passing therethrough. A heating heat exchanger (8) is also located within the first and second air passages (13, 14) downstream from the cooling heat exchanger (7) to heat air passing therethrough. A temperature sensor (39) is located at a side of the second air passages to detect a cooling temperature of the cooling heat exchanger (7). Adjusting means adjusts the refrigerant flow into the cooling heat exchanger (7). Adjusting control means compares the cooling temperature detected by the temperature sensor (39) to a set temperature for controlling the operation of the adjusting means which controls the refrigerant flow into the cooling heat exchanger (7). A copy of the entire application is reproduced in Appendix B.

ISSUES

Appellant's present the following issue for review:

1) Whether or not Claims 1, 3-8, 10 and 19-24 are unpatentably under 35 USC §103 over JA-7-47831 or Iritani (USP 5,526,650) or Nonoyama (USP 5,309,731) in view of JA-6-270645.

2) Whether or not Claims 1, 3-8, 10 and 19-24 are unpatentable under 35 USC §103 over the prior art as applied to Claims 1, 3-8, 10 and 19-24 above and further in view of Fujii (USP 5,191,768).

GROUPING OF THE CLAIMS

Claims 1, 3-8 and 19 stand or fall together.

Claims 10 and 20-24 stand or fall together.

ARGUMENT

The present invention in Claim 1 relates to an automobile air conditioning apparatus which utilizes a dual flow mode design. Air from inside the passenger compartment (inside air) is drawn from inside the passenger compartment by a blower and blown out into a lower portion of the passenger compartment (towards the passenger's feet). Air from outside the passenger compartment (outside air) is drawn from outside the passenger compartment by the blower and blown out towards the inside of the windshield inside the passenger compartment. The inside air and the outside air travel through separate passages. This is known as a "double layer" air conditioning apparatus. A cooling heat exchanger cools both the inside air and the outside air as it travels through the air conditioning case. A heating heat exchanger heats both the inside air and the outside air as it travels through the air conditioning case downstream from the cooling heat exchanger. The amount of refrigerant that is supplied to the cooling heat exchanger is controlled so that a specified air temperature is reached after the air has passed through the cooling heat exchanger. The temperature of the air which has passed through the cooling heat exchanger is monitored by a temperature sensor. In Claim 1, the temperature sensor is located in one of the inside and outside air passages. The specified target air temperature for this temperature sensor which controls the refrigerant flow to the cooling heat exchanger is constantly changed with the change being based upon the temperature of air outside the passenger compartment (i.e., changing means for changing the set temperature according to a temperature of outside air.

The present invention in Claim 10 relates to an automobile air conditioning apparatus which utilizes a dual flow mode design. Air from inside the passenger compartment (inside air) is drawn from inside the passenger compartment by a blower and blown out into a lower portion of the passenger compartment (towards the passenger's feet). Air from outside the passenger compartment (outside air) is drawn from outside the passenger compartment by the blower and blown out towards the inside of the windshield inside the passenger compartment. The inside air and the outside air travel through separate passages. This is known as a "double layer" air conditioning apparatus. A cooling heat exchanger cools both the inside air and the outside air as it travels through the air conditioning case. A heating heat exchanger heats both the inside air and the outside air as it travels through the air conditioning case downstream from the cooling heat exchanger. The amount of refrigerant that is supplied to the cooling heat exchanger is controlled so that a specified air temperature is reached after the air has passed through the cooling heat exchanger. The temperature of the air which has passed through the cooling heat exchanger is monitored by a temperature sensor. In Claim 10, the temperature sensor is located in the second air passage which is the outside air passage.

JA-7-47831

The JA831 patent discloses a double layer air conditioner which includes an evaporator outlet temperature sensor 80. JA831 is silent as to the exact location of sensor 80. JA831 only states on page 13 of the translation that an evaporator outlet temperature sensor for detecting the temperature Te of cooled air which is immediately after having flowed through the evaporator 31. Thus, we are not sure where temperature

sensor 80 is located. Thus, with regards to Claim 10, the Examiner is clearly using hindsight reconstruction when Claim 10 is rejected as being obvious over the JA-7-47831 reference. The Examiner has stated that "regarding the location of the sensor, Applicants have not demonstrated any unexpected result associated with either location." Applicant respectfully disagrees with the Examiner. As shown in Figure 11A-11D and described in the specification, Applicant has indeed demonstrated the advantages of locating the sensor in the second or outside passage. When the temperature sensor is located in the first or inside air passage, the set temperature increases in accordance with a decrease of the temperature of the outside air (Figures 11A and 11B). When the temperature sensor is located in the second or outside air passage, the set temperature decreases in accordance with a decrease of the temperature of the outside air (Figures 11C and 11D). Thus, the entire control function for the air conditioning unit is completely different based upon which passage (inside or outside) within which the temperature sensor is located. It is clear that JA-7-47831 does not recognize, describe or even appreciate this difference and that it is clearly hindsight reconstruction of the Examiner which is the basis for his rejection of Claim 10 and this hindsight reconstruction has consistently been rejected by the courts in numerous cases including In re Meng and Driessen 492 F.2d 834, 181 U.S.P.Q. 94 (C.C.P.A. 1974); Lindemann Machinefabrik GmBH v. Dennison Manufacturing Co., 810 F.2d 1561, 1 U.S.P.Q. 2d 1593 (Fed. Cir. 1987); and In re Fritch, 23 USPQ 2d 1780 (Fed. Cir. 1992).

Regardless of where temperature sensor 80 is located. JA831 does not adjust the specified temperature of this air in accordance with the outside air temperature which is claimed in Claim 1 in its last paragraph (changing means for changing the set

temperature according to a temperature of outside air). As stated in page 24 of the tranlsation of JA831, Te, the temperature detected by sensor 80 is under feedback control by IP control or fuzzy-algorithmic control in a cooling mode. The control of the evaporator and thus Te is utilized to control the blowing out temperature T_{AO} which is required to maintain the temperature of the passenger compartment at the pre-set temperature T_{set}. Thus, the temperature sensed by sensor 80 (Te) is utilized to control the operation of air conditioning unit and there is no adjustment to this sensed temperature. When the sensed temperature of sensor 80 in JA831 is too high or too low, a speed adjustment is made to the compressor to control the cooling. The present invention, in Claim 1, determines a set temperature and then adjusts this set temperature based upon the temperature of the outside air. This feature is clearly not disclosed, taught or suggested by JA831.

US 5,526,650 – Iratani et al.

Iritani et al. has a disclosure which is similar to JA-7-47831 in that a temperature sensor 80 is disclosed but there is no disclosure regarding the specific location for sensor 80 and there is no disclosure, suggestion or incentive presented for adjusting the set temperature based upon the temperature of outside air. Thus, the arguments presented above with regards to JA-7-47831 apply here also.

US 5,309,731 Nonoyama et al.

Nonoyama et al. discloses a double-layer type of air conditioning device but Nonoyama et al. does not disclose, teach or even suggest the incorporation of a temperature sensor within the entire air conditioning case and certainly not in one of the

air passages for detecting the cooling temperature of the cooling heat exchanger. Thus, the arguments presented above with regards to JA-7-47831 apply here also.

JA-6-270645

The Examiner relies upon JA645 to teach a regulator for controlling the evaporator temperature as a function of outdoor temperature. In JA645 there is described an air conditioner in which the double layer mode is not disclosed. In addition, JA645 does not change the target set temperature for the air having passed through the cooling heat exchanger. JA645 simply adjusts the on/off temperature of the refrigerant compressor with a drop in the outside air temperature when the air conditioner is in the inner air mode. Thus, regarding Claim 1, the temperature sensor is not located within one of two passages and it does not adjust the target set temperature for the air passing through the cooling heat exchanger. Regarding Claim 10, because there is only one air passage, the temperature sensor cannot be located in the second passage. JA645 is directed to solving a problem of mist on the windshield when the air-conditioner is in an inner mode. JA645 accomplishes this by adjusting on/off for the compressor and has no adjustment for the target set temperature as claimed in Claim 1 or for locating the temperature sensor in the second passage as claimed in Claim 10.

US 5,191,768 – Fujii

The Examiner also relies on Fujii to teach regulation of the evaporator as a function of outdoor temperature. Fujii discloses an air conditioner which does not have a double layer flow and does not adjust the target set temperature. Fujii simply sets a maximum temperature for the evaporator at various outdoor temperatures. As stated in column 6, lines 52-60, the maximum temperature for the evaporator is set at 3°C when

the outdoor temperature is 10°C or below; it is set at 13°C when the outdoor temperature is between 20°C and 25°C and at 7°C when the outdoor temperature is 30°C or above. Between 10°C and 20°C, it is set between 3°C and 13°C and between 25°C and 30°C it is set between 13°C and 7°C. The system calculates a desired temperature for air exiting the evaporator and if this temperature is above the maximum temperature described above, the system selects the maximum or the lower of the two temperatures. If the system calculates a desired temperature and this temperature is below the maximum temperature, the calculated temperature is selected because it is the lowest. (Column 6, line 64 through Column 7, line 9). Thus, regarding Claim 1, the temperature sensor is not located within one of two passages and it does not adjust or change the target set temperature according to the outside temperature, it sets a maximum valve for that set temperature which may or may not be adjusted. Regarding Claim 10, because there is only one air passage, the temperature sensor cannot be located in the second air passage.

CONCLUSION

Applicants respectfully submit that the Examiner has not proved that his combination of references presents a prima facie case of obviousness as the references cited by the Examiner do not disclose, teach or suggest the elements of the claimed invention, much less suggest the combination of the references.

Applicants' invention provides the art with a unique air conditioning system which adjust the target set temperature based on the outside temperature (Claim 1) and specifically locates the temperature sensor in the outside air passage (Claim 10) to provide an air conditioning system which reduces and/or eliminates frosting of the

evaporator. Accordingly, reversal of the Final Rejections for Claims 1, 3-8, 10 and 19-24 is respectfully requested.

Respectfully submitted,

Dated: March 4, 2002

By: _____
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